

WHAT IS CLAIMED IS:

1. A system for correcting twist in airfoil components having a twist angle, said system comprising:

means for twisting an airfoil component;

means for measuring the twist angle of said airfoil component;

5 and

means for controlling said means for twisting in response to said means for measuring to obtain a desired twist angle.

2. The system of claim 1 wherein said means for twisting includes a first fixture assembly for holding a first end of said airfoil component and a second fixture assembly for holding a second end of said airfoil component.

3. The system of claim 2 wherein said means for twisting further includes a rotary drive unit for rotating said first fixture assembly.

4. The system of claim 3 wherein said rotary drive unit includes an adapter that engages said first fixture assembly and a motor drivingly coupled to said adapter.

5. The system of claim 4 further comprising a gear reducer unit coupled between said adapter and said motor.

20 6. The system of claim 4 further comprising a torque sensing assembly coupled between said adapter and said motor.

7. The system of claim 2 further comprising a carriage capable of moving linearly with respect to said first fixture assembly, said second fixture assembly being mounted on said carriage.

167 8. The system of claim 7 wherein said means for measuring includes a gage mounted on said carriage.

167 9. The system of claim 7 further comprising a screw rotatively mounted adjacent to said carriage, a motor drivingly coupled to said screw, and a nut threadingly mounted on said screw, said nut being attached to said carriage.

5 10. The system of claim 2 wherein said first fixture assembly includes:

10 O a base plate;  
first and second support blocks mounted to said base plate;  
a slide block slidingly mounted to said first support block;  
a pneumatic cylinder unit mounted on said first support block,  
said pneumatic cylinder unit engaging said slide block for moving said slide block relative to said second support block;  
a first jaw supported by said slide block; and  
a second jaw supported by said second support block in juxtaposition with said first jaw.

15 O 11. The system of claim 10 wherein said first and second jaws are interchangeable.

20 12. The system of claim 2 wherein said second fixture assembly includes a jaw holder and a jaw attached to said jaw holder.

167 13. The system of claim 12 wherein said jaw is interchangeable.

25 14. A system for correcting twist in airfoil components having a twist angle, said system comprising:

a base having a lower portion and an upper portion extending vertically upward from said lower portion;

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- a horizontal plate supported by said lower portion;  
a vertical plate supported by said upper portion;  
a lower fixture assembly for holding a first end of an airfoil component mounted on said horizontal plate;
- 5 a rotary drive unit for rotating said lower fixture assembly mounted to said horizontal plate;
- a carriage slidingly mounted on said vertical plate;
- 10 an upper fixture assembly for holding a second end of said airfoil component mounted on said carriage;
- a gage for measuring twist angle in said airfoil component mounted on said carriage; and
- 15 a controller for controlling said rotary drive unit in response to input from said gage to obtain a desired twist angle.
15. The system of claim 14 wherein said rotary drive unit includes an adapter that engages said lower fixture assembly and a motor drivingly coupled to said adapter.
16. The system of claim 15 further comprising a gear reducer unit coupled between said adapter and said motor.
17. The system of claim 15 further comprising a torque sensing assembly coupled between said adapter and said motor.
- 20 103  
18. The system of claim 14 further comprising a screw rotatively mounted to said vertical plate, a motor drivingly coupled to said screw, and a nut threadingly mounted on said screw, said nut being attached to said carriage.
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19. The system of claim 18 wherein said motor is controlled by said controller.

20. The system of claim 14 wherein said lower fixture assembly includes:

D a base plate engaged by said rotary drive unit;

first and second support blocks mounted to said base plate;

5 a slide block slidably mounted to said first support block;

a pneumatic cylinder unit mounted on said first support block, said pneumatic cylinder unit engaging said slide block for moving said slide block relative to said second support block;

a first jaw supported by said slide block; and

10 a second jaw supported by said second support block in juxtaposition with said first jaw.

D 21. The system of claim 20 wherein said first and second jaws are interchangeable.

15 SP 22. The system of claim 14 wherein said upper fixture assembly includes a jaw holder attached to said carriage and a jaw attached to said jaw holder.

103 23. The system of claim 22 wherein said jaw is interchangeable.

20 24. A method for correcting twist in airfoil components having a twist angle, said method comprising:

clamping a first end of an airfoil component with a first fixture assembly, said first fixture assembly being capable of rotary motion;

holding a second end of said airfoil component with a second fixture assembly;

25 measuring said airfoil component's twist angle;

inputting the measured twist angle into a controller;

using said controller to compute how much said airfoil component needs to be twisted to achieve a desired twist angle; and

rotating said first fixture assembly to twist said airfoil component to said desired twist angle, wherein rotation of said first fixture assembly is controlled by said controller.